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Federal Department of the Environment,
Transport, Energy and Communications DETEC

Swiss Federal Office of Energy SFOE
Energy Research and Cleantech

Mobility Research Programme

Call 2023 for Research Proposals: "Enabling an efficient transport system"

The Mobility Research Programme promotes application-oriented research in the transport domain. The overarching goal is the transition to low/zero-emission mobility in a highly efficient transport system, and a general reduction in energy consumption. This goal can in principle be reached by *avoiding* unnecessary traffic, *shifting* to more sustainable and efficient modes of transport, and technical *improvements*.

The Mobility Research Programme focuses on three areas: (i) new mobility concepts, (ii) fundamental system analyses and perspectives and (iii) technical improvements of vehicles and drives. In line with the Federal Energy Research Masterplan and with the Energy research concept of the Swiss Federal Office of Energy, research priorities are defined through thematic calls.

For this call, the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects applies[1].

Scope

Researchers are invited to submit research proposals in one of the three following fields (see below). Projects can concentrate on one or several aspects of the fields proposed and do not have to treat all sub-points and research questions listed.

1) Decarbonisation of freight transport

The rapidly increasing share of electric cars paves the way for the decarbonisation of private individual transport. The case of freight transport is more complicated due to the higher energy demand per vehicle and high hours of operation. Vehicle purchases for commercial use are purely rational driven by operational cost. BEV and H2/FC are the currently most promising alternative drive trains for heavy-duty applications, with BEV quickly gaining market share.

- **Electric freight vehicles (EFV)** have very high battery capacities (up to 1000 kWh). In typical commercial operations, idle times are short compared to operating hours. Thus, only limited time is available for charging. What **are ideal fleet compositions and operating modes** for energy efficient and economic freight transport?
- The electrification of freight transport has a profound impact on the **charging infrastructure.** Overnight depot charging alone would require a strong reinforcement

[1] For this call, the version of 21 December, 2022 applies.

of the local distribution grid as well as high battery capacities. What are ideal **charging strategies** for commercial operators and what kind of infrastructure is needed, considering all possible options such as depot charging, fast-charging, electrified roads and others?

- The growing popularity of online shopping and other services is leading to a large increase in home delivery trips. The Transport Outlook 2050 predicts 58% more light commercial vehicle trips in 2050. What are efficient **logistics concepts** taking into account alternative drive trains, existing infrastructure (hubs, railway) and changing consumer/customer needs? A **holistic view** is required, considering important indicators such as energy consumption, emissions, space requirements, traffic-related external costs, economic viability and social acceptance.
- What are effective **incentives** to support the transition towards environmentally friendly modes of freight transport?

2) Active- and micro-mobility

Both active- and micro-mobility are desirable transport modes with low environmental impact, in particular if they substitute car trips. The growing popularity of bicycles, e-bikes and cargo-bikes in recent years is encouraging.

- What are the **major obstacles** preventing a further penetration of active- and micro-mobility? Identify the most effective measures to increase their share.
- Our **road system** was originally built predominantly for motorized traffic, i. e. cars and trucks. What are the most **promising modifications** to support active- and micro-mobility, both taking into account limited space and the efficiency of the transport system as a whole?
- **What trips can be substituted?** Consider the status quo (and existing studies/literature) and demonstrate where else active- and micro-mobility could substitute car trips. The consideration of new types of light vehicles is welcome. Differentiate between desired and undesired substitution and potential rebound effects.
- The use of these mobility modes is much related to **user comfort**. The concept of 15/10-min cities is currently being propagated for urban areas. What are the most important comfort factors (time savings, ease of use, health, convenience, …) related to mobility tool choice and how can they be addressed?

3) Multimodal and shared mobility

Owning a car largely governs the choice of transport mode. Mobility as a service (MaaS) and sharing concepts emerged as alternatives to car ownership, offering an extension of public transport. In Switzerland in particular, however, most of these new mobility concepts are struggling economically and have not reached a significant market share, probably mainly due to the sheer purchase power and thus preference for vehicle ownership.

- Multimodal and shared mobility depend on the **availability of data** concerning traffic, vehicles and user demand. The administration is in the course of establishing a national data network infrastructure for mobility (NADIM). Identify the most important data to enable MaaS and how it can be shared effectively.
- Compare the adequacy of presently offered multimodal and shared solutions with **consumer preferences**. Why is there only little success so far and what kind of **business models** could be more promising? Could increasing digitalisation and automatic driving make a difference?
- Shared mobility is considered an important solution for the "**last mile**", i. e. the link between the point of interest and a well-connected public transport stop. How can efficient **mobility hubs** increase the comfort level and thus acceptance of intermodal trips, both in urban and rural areas?

Timeline

15 March 2023	Publication of the call
29 March 2023	Deadline for questions regarding the call
15 June 2023	**Deadline for submission of pre-proposals**
July 2023	*Notification of pre-proposals invited to submit a full proposal*
September 2023	***Deadline for full proposal submission***
October 2023	*Notification of accepted projects*
November 2023 – February 2024	*Launch of accepted projects*

(The timeline after the submission of pre-proposals depends on their number and is tentative only.)

Contact Information

If you have any questions regarding the call, please do not hesitate to contact:

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The deadline for questions is 29 March 2023. Answers to questions of general interest and relevance will be published on the Mobility Research website on 5 April, 2023.
After 29 March, 2023, only administrative questions will be answered.

No extension of the deadline will be granted.

Eligibility

The call is addressed to universities (including ETH-domain), universities of applied science, further public and private research organizations and private companies in Switzerland. The participation of young scientists in the research teams is encouraged. Researchers in the public and private sector can apply for remuneration of the personnel costs according to the maximum rates provided in the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects. The Mobility Research Programme does not pay any contribution to overhead cost.

Proposals from working groups, including specialists from different fields, are welcome (main applicant and contact should be indicated). Gender-balance and diversity are encouraged. An adequate share of own and third-party contributions (in-kind and/or cash) is expected and must be indicated when the pre-proposal is submitted and formally confirmed with submission of the full proposal. Collaboration with partners from industry is encouraged, in particular with relevant players in the logistics and transport industry.

Only projects with a clear focus on the transport sector and in line with the scope of this call can be considered for funding. The projects should address questions relevant for Switzerland.

Public and private research organisations outside Switzerland are welcome to apply. However, they must do so in a consortium with at least one Swiss partner and work on research questions relevant to Switzerland. The Swiss partner has to provide a substantial contribution to the research project and must be listed as the main applicant.

Supported projects typically receive public funding in the range of 100–400 kCHF and have a duration between 24 and 36 months. However, there are no formal limits. The indicative call budget is in the

range of 2.5-3 million CHF and depends on the final selection of projects and distribution of payments over the fiscal years.

Applicants must comply with the conditions set out in the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects. There is no entitlement to funding.

Application Procedure

The call follows a two-stage submission and evaluation procedure. First, a pre-proposal (max. 6 pages, see pre-proposal template) is submitted. If the pre-proposal is selected after evaluation, the applicant is invited to submit a full proposal (approximately 10 pages). Invitation to submit a full proposal does not guarantee funding.

The projects presented in the pre-proposal and in the full proposal must be consistent. Any change to the plans described in the pre-proposal should be explained and justified.

At both stages of the application, the main project partner prepares a proposal (pre-proposal or full proposal) using the template available on the Mobility Research website.

The pre-proposals have to be submitted as one single PDF file by e-mail to energieforschung@bfe.admin.ch (subject: "**Mobility Call 2023**") **by 15 June 2023.**

The receipt of the pre-proposal will be confirmed in due time.

Evaluation of Proposals

The project proposals will be evaluated along the criteria listed in the Appendix, both at the pre-proposal and at the full proposal stage.

Appendix : Evaluation criteria

A submitted project has to fulfil **all** eligibility criteria to be evaluated.

Eligibility criteria

Formal criteria:

Criteria		
F1	Is the application complete (does the proposal include all information requested in the call)?	☐ yes ☐ no
F2	Are the objectives of the research project clear and is the research proposal well structured?	☐ yes ☐ no
F3	Was the application submitted in time?	☐ yes ☐ no
F4	In case of scientific publications: is open access granted?	☐ yes ☐ no

Content related criteria:

Criteria		
C1	Do the research questions to be addressed fit the call, and do they fall into the competence of the SFOE?	☐ yes ☐ no

Qualitative Criteria

Each of the main criteria will be scored on a scale from 1 to 5 and are weighted as indicated below. The 1–5 scoring system for each criterion indicates the following assessment:

1 – Poor: The criterion is inadequately addressed or there are serious inherent weaknesses.
2 – Unsatisfactory: The criterion is broadly addressed but there are significant weaknesses.
3 – Satisfactory: The criterion is addressed but with a number of shortcomings.
4 – Good: The criterion is well addressed but with a number of shortcomings.
5 – Very Good: All relevant aspects of the criterion are addressed; any shortcomings are minor.

For a project to qualify for an invitation to submit a full proposal to the second round of the call, each qualitative criterion (Q1 to Q5) has to obtain a minimum score listed in the table. Sub-criteria marked with ** must reach the minimum score on their own.

Criteria		Minimum evaluation
Q1	**Organisation (weight: 1.0)**	**ø 3**
	Competencies, organisation, responsibility ** Are all the competencies crucial to the project covered? Has a clear project organisation been established? Are the responsibilities laid down clearly?	At least 3
	Schedule and milestones Is the proposed schedule realistic and efficiently drawn up? Have clearly measurable milestones been stipulated (stage-gate targets)?	
	Cost-benefit ratio, subsidiarity Does a project hold out the prospect of significant benefits in relationship to the costs involved? Have sufficient in-kind contributions and third-party funds been promised?	

Criteria		Minimum evaluation
Q2	**Excellence (weight: 1.0)**	**ø 3**
	Preliminary work, suitability, expertise Can the project team build on previous work? Does the project team have the expertise required (suitability)?	
	Academic record, recognition Does the project team have broad experience (academic record) or are they recognised specialists in their field?	
	Teams' potential for success Is clear potential for success discernible in this project team?	
Q3	**Content of project (weight: 2.0)**	**ø 3**
	Relevance, national and international cooperation ** Is the project scientifically, politically and strategically relevant and does the content contribute to a research priority set out in the call? Is it part of an international cooperation within the IEA or the EU research programme, or is it part of other national or international collaboration schemes (e.g., SCCER, DACH)?	At least 3
	Value creation, innovative content Do the findings lead us to expect high value creation for Switzerland - in an economic or scientific respect? Does the project build up a large body of knowledge or know-how and/or does it pursue an innovative or novel approach?	
	Approach, methodology and data Is the proposed approach suitable to deal with the issue? Is the methodology adequate to solve the issue? Is access to the data required guaranteed/has the strategy to compile data been clearly defined?	At least 3
Q4	**Opportunities, risks (weight: 1.0)**	**ø 3**
	Energy potential Does the project contribute to a safe, sustainable and economical energy provision or to a lower and rational energy consumption?	
	Discussion in public or before a professional audience Are the research findings of interest to the general public? Do the findings constitute a useful foundation for the opinion building and decision-making processes among informed people?	
	Sustainability Will the findings contribute to sustainable development in all three dimensions (ecological, economic and social) at national or global level?	
Q5	**Monitoring, dissemination and diffusion (weight: 1.0)**	**None**
	Monitoring Is a monitoring or other accompanying activity such as workshops or a monitoring group planned?	
	Knowledge transfer Are knowledge transfer and publications planned? Is an open access/data/model strategy included?	
	Potential for implementation or as multiplier For technical projects: is an implementation plan included? Is the project team responsible for further development or does it already have potential customers? Does the technology/procedure display technical or economic advantages that indicate potential as multiplier? For studies/concepts: are relevant stakeholders (public/private) involved that are likely to apply project results for their own strategies or concepts?	